

WE CLAIM:

1. A motor assembly, comprising:

a plurality of redundant bearings;

a plurality of coaxial support elements, with at least one of said support elements rotatable about an axis of rotation; and

an armature rotatably guided by said plurality of support elements to rotate about said axis of rotation;

said bearings providing redundancy to continue armature rotation in the event one bearing fails.

2. The assembly of claim 1, further comprising:

a shaft guided by, and rotatable with respect to, each of said plurality of coaxial support elements about said axis, said shaft guiding said armature.

3. The assembly of claim 2, wherein said plurality of coaxial support elements further comprises inner and outer sleeves surrounding said shaft.

4. The assembly of claim 1, further comprising:

a rotor element coupled to said armature.

5. The assembly of claim 4, further comprising:

a plurality of redundant stators attached to one of said coaxial support elements, each of said stators having current terminals to receive a current producing an electric field to induce said armature to rotate in response to a received current, at least one of said redundant stators being operable to induce said armature to rotate even if one stator fails.

6. The assembly of claim 2, further comprising:

at least one blade coupled to and rotatable with said armature.

7. The assembly of claim 1, wherein said plurality of coaxial support elements further comprises a housing containing said armature and said plurality of redundant bearings.

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8. The assembly of claim 7, wherein said plurality of coaxial support elements further comprises a centripetal sleeve adapted to rotate about an axis within said housing and being guided by at least one of said redundant bearings.

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9. The assembly of claim 8, further comprising:

a plurality of blades coupled to said armature, each of said blades being adapted to rotate about said axis within said centripetal sleeve;

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wherein said plurality of fan blades is rotatable about said axis independent of rotation of said centripetal sleeve and housing.

10. The assembly of claim 9, further comprising:

at least one rotor element connected to said armature;

redundant stators connected to an interior portion of said housing opposed to and in a complementary position with respect to said at least one rotor element;

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so that application of an electromotive force between said rotor and stators induces said blades to rotate even if one of the stators fails.

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11. The assembly of claim 10, wherein said rotor comprises a magnet.

12. The assembly of claim 10, wherein said rotor comprises a motor winding.

13. A computer apparatus, comprising:

a computer casing;

a fan in said computer casing, said fan comprising a rotational shaft and at least one fan blade carried by
5 and rotational with said shaft; and

inner and outer coaxial sleeves supporting said shaft to enable it to rotate independent of the rotation of said inner and outer sleeves.

14. The apparatus of claim 13, further comprising:

a magnet connected to said fan blade; and

a motor winding connected to said outer sleeve;

said fan blades rotating with said shaft in response
5 to said motor winding producing an electromotive force on said fan blades.

15. A motor shaft assembly for a computer, comprising:

a rotational shaft;

an inner sleeve surrounding said rotational shaft;

an outer sleeve surrounding said inner sleeve;

5 a first bearing between said shaft and inner sleeve;
and

a second bearing between said inner and outer sleeves;

wherein said sleeve and bearing combinations provide
10 redundancy for continued shaft rotation in case of failure of one of said bearings.

16. The assembly of claim 15, further comprising:

at least one fan blade carried by and rotatable with said shaft, so that said at least one fan blade is operable to rotate with said shaft independent of the rotation of said inner and outer sleeves.

17. The assembly of claim 15, further comprising:

a rotor element coupled to said at least one fan blade;

a plurality of redundant stators attached to said outer sleeve, each of said stators having current terminals and producing an electric field to induce said blades to rotate in response to a received current, at least one of said redundant stators being operable to induce said at least one blade to rotate even if one stator fails.